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RAILWAY REFORM,
AND
RIGHTS
OF
SHAREHOLDERS AND THE PUBLIC
IN THE
RAILWAY HIGHWAYS

United Kingdom.

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RAILWAY REFORM.

THE importance of direct or indirect control of the Public Highways, by Government, has hitherto been considered by our legislators as being worthy of more than ordinary attention, and during the last fifty years numerous Acts of Parliament have passed for their regulation, in all of which the rights of the public have been preserved, up to the period of the formation of the new description of highways called RAILWAYS.

Why the public interests in such undertakings are now sacrificed to the purposes of creating a 10 per cent. gambling stock, when the government funds produce but 3 per cent., is a fit subject for serious consideration by every landowner, merchant, and tradesman in the country; and the object in publishing this pamphlet is to prove the fraudulent working of the present system, for the information of those who have not given the same attention to the proceedings of persons hitherto so improperly exercising the absolute control of the existing railways, and to prove, beyond all reasonable doubt, that the present system is a disgrace to a great commercial country like England: and although the facts stated are, to a certain extent, confined to the south-eastern district, in which the author resides, they are a fair example of most lines in the East, West, and Northern counties.

In making these remarks, it must be understood that they are not intended to reflect on the majority of Directors, who are honourable men, but more or less influenced by the patronage they possess, and by some of the more active and jobbing class with whom they become associated in the management.

The numerous projects of 1845 are the results of the 10 per cent. clause, by creating a desire for railway investments: but the general inexperience of the promoters, and, in many cases, their anxiety for

realizing some of the unfair advantages enjoyed by the managers of the old companies, has, fortunately for the public, operated as proofs of the necessity for a revision of the 10 per cent. system, which may be judged of by the following example :—

The cost of the Brighton Railway is £3,000,000*			
Do.	do.	Great Western ..	7,000,000
Do.	do.	Birmingham ..	6,000,000
Total ..			<u>£16,000,000</u>

But the terms for purchase by the Government being 25 years on a 10 per cent. income, the price will be £40,000,000. The original estimates of those lines (and which are about a fair value for all the requisite works and land,) were about £6,000,000; therefore, if ever the Government should decide on purchasing them, the sum of £40,000,000 must be given for what could be made, within a moderate distance, as competing lines, for about £6,000,000. Any practical road surveyor or builder, acquainted with railway works, who will take the trouble to examine the quantities of the respective works and land, will support this opinion. Taking into consideration the proper cost of construction, and the small cost of the locomotive power, which is only about 9d. per mile for drawing a train with hundreds of passengers, there are substantial grounds for rigid investigation into the proper cost of construction of railways, and the general expenses of management, to prove what can justify the charges of from 1d. to 3d. per mile for each passenger, when one-third of that amount must produce ample returns on the requisite capital, under sound and honest management: because if the present charges for the first class passengers is 3d. per mile, on a cost of £16,000,000, and 30 per cent. for working expenses, the same passengers could be conveyed at 1d. per mile on a cost of £6,000,000; and there can be no reasonable doubt the shareholders would receive a larger per centage of profit by the great increase of traffic, even if the working expenses amounted to 50 per cent.

In addition to the great influence of the railway managers' interests, there is the difficulty of preventing alarm amongst the shareholders,

* The charge of three millions does not include any branch except the short one to Shoreham.

who are generally induced to believe that reform in railway management would prove injurious to their property instead of protecting it ; whereas the least reflection should convince them, that the effect of reform must be that of stamping their investments with fixed value instead of a fluctuating one, which must ever be the case under the present system.

With respect to the present Government Railway Board, it is one of the worst constituted in the kingdom for the purposes intended. At its head is a military engineer. Now what would be said, if Sir James M'Adam, or any other eminent road surveyor, had been appointed to superintend the fortifications of the country ? The appointment of a military engineer is equally as absurd for the formation of highways, notwithstanding royal engineers may have superintended the making of a few roads in the colonies.

That a Government Railway Board, with extensive powers, is absolutely required to protect the public, is clear ; but it should be composed of practical men only, qualified for the duties ; for example :

Sir James M'Adam, and two or three experienced road and county bridge surveyors, well acquainted with earth and bridge works ; assisted by two or three engineers practically acquainted with the construction and working of locomotive engines ; two or three experienced miners, as inspectors of tunnels : all competent to report on the various new projects previous to their being submitted to Parliament, and during their construction.

In addition to the above, there should be inspectors and auditors to superintend the working lines, and examine the accounts—the whole under the control of three Commissioners, with power to make rules and orders from time to time as circumstances may require. A Government Railway Board so formed would protect the shareholders and the public against the present profligate expenditure in railway works, and their management. The mere fact of twenty millions annually being expended in railway works, materials, &c., and scarcely a contract advertised, is ample evidence of the jobbing and patronage. For if all were fair in the outlay, the daily newspapers would have pages of railway contract advertisements.

Shareholders in railways cannot better promote their interests, than by supporting the Government in reforming the present system, for the purpose of protecting their property against future fluctuations in

value, and thereby securing regular returns, instead of holding a stock used in many instances by scheming directors and engineers, for gambling purposes, which have in some cases caused a rise or fall of one million in a day or two in one stock.

Landowners have hitherto had the principal control of the highways of the country near their respective estates; but they are being superseded by Liverpool, Manchester and London Merchants. This is a just ground of complaint; for the interests of landowners are much affected by the removal of the traffic from the turnpike roads; and although the new highways may run through their land, they have no access; except at a station frequently placed two or three miles distant. It appears monstrous that a set of adventurers, without a shilling of local interest, should obtain an Act of Parliament to make a road through land, and prevent the owner from the benefit of its use at least once during the night or day for the conveyance (under proper regulations for the public safety) of produce, manures, &c.

The question of railway reform is not one for political parties to differ upon, as all classes are deeply interested in obtaining their rights in the use of the future principal highways, except a few directors connected with old lines and their friends.

A great fuss has been made, during the last ten years respecting the debt of eight or ten millions on turnpike roads. At the same time about £100,000,000 have been expended on the railway highways, for works which ought to have been executed for less than half the amount.

In addition to this enormous waste of money and charge on the public, there is the operation of the 10 per cent. clause to make the debt of £100,000,000 equal to £250,000,000. Incredible as this may appear, yet such is the fact: and if the Government neglect to put a stop to this monstrous system, the railway influence will very shortly have more power and patronage than will be found convenient to deal with by any government in the world.

As to the introduction of clauses in railway acts, to render railways liable to future legislation, it will prove a mere farce, if not acted upon directly; for the managers will very soon be able to set the legislature at defiance. When it is alleged, that one director connected with the management of railways realized £300,000 by one transaction, it must be obvious that the parties are armed with immense resources and power, which is greatly supported by their stand-

ing in society and the general ignorance of the shareholders and the public of the real value of railway works.

With respect to the Committees obtained by Mr. Morrison, Mr. Patten, and other gentlemen professing to be desirous of amending the system, very little good can be expected without general powers to investigate the evils, and consider the best remedies.

The good effects of special committees of the House of Commons are generally neutralized by the appointment of persons more or less interested in the abuses; and those hitherto appointed for the purpose of reporting on railway legislation, have been of that unfortunate description. Even the one recently appointed on the motion of Mr. Morrison has three persons who should have been excluded, upon the same principle that defendants are not permitted to sit on juries selected to decide on cases in which they are interested. It would be quite enough to examine Mr. Hudson, Mr. Russell, and Sir James Easthope, and print their evidence, without permitting them to select and examine witnesses, especially as each is connected with interests vigorously prosecuted against those of shareholders and the public. The circumstance of Sir John Easthope being connected with the management of a line of railway between London and Southampton, charging the shareholders £24,000 per annum for the surface repairs, which might be done by the company for one-sixth part of the amount, is sufficient to justify these remarks. Mr. Hudson, who is said to have realized £300,000 in one railway transaction, and Mr. Russell, being connected with the management of a line estimated at £2,500,000, and stated to have cost the shareholders the enormous sum of £7,000,000, must be considered disqualified, without imputing to them any thing of a disreputable character, because in two of the cases the faults may arise from want of experience, and the other by good luck or extraordinary tact and management. The shareholders and the public, however, require purely disinterested judges and advisers, and it would reflect credit on all who are not so, if they retired from that or any other committee appointed to investigate abuses in the management of railway highways.

The following leading article, in the "Times" of the 10th April, is so clearly applicable to the present state of projected railways, that it cannot be too attentively read, or too seriously considered:—

"The bill for promoting the spontaneous dissolution of railway projects will



But unless one's own common-sense, and the universal practice of the continental governments, is exceedingly mistaken, a Premier has something more to do than first help to puff up an enormous bubble of speculation, and then at the last moment, when capital is exhausted or *locked up*, to provide peculiar facilities and encouragements for dissolution, and recommend the weaker to go to the wall, and those who can to survive. But we are unjust to the Premier; he has done more than this. Dr. Johnson speaks of the philosopher who, when he is told that his neighbour's house is on fire and the children in danger, begins to remark on the laws that regulate the progress of flame. Sir Robert is equally cold in his comfort, and scientific in his views. Carefully analyzing the history of the past, he does 'not see any reason to suppose that individual sufferings of any extent or kind will prevent the periodical recurrence of this fever of speculation.'

"Before it is quite too late, and before the legislature has itself put fresh impediments in the way, we intreat it to recur to a more initiative and directive policy. Previous to the passing of one new bill, let it come to some understanding as to the limit which it will not be prudent to pass, and also as to the districts and *routes* which seem to claim a preference. Sir R. PEEL never gave utterance to a more unwise and unpractical remark than when he said it was better not to touch the subject of limits. He has himself very properly indicated a limit. He did so when he referred to the amount of railway expenditure authorized last session as necessitating caution, and even abstinence, now. He will do so again. By the middle of July we shall have him rising in the House, and saying, 'I must remind you of what you have done, and what you are now about. I warned you at the beginning of the session, that last year we had sanctioned an expenditure of £79,000,000. You have this session passed bills, including deviations, and extensions, and junctions in existing railways, to the amount of £50,000,000. My own belief is that you cannot safely do more. The bill now under consideration involves a large outlay. I am sure you will consult the interests of the subscribers themselves if you put it off to another session.' Whether he says this or not, we cannot doubt that members and the public will this year keep an eye on the growing total of successful bills; and, as it increases, act with proportionate care. The *limit*, therefore, will tell; at last, if not at first; and it stands to reason that it ought therefore to have an equitable application all through the session, instead of being reserved to strangle some project whose very importance has thrown it to the rear of the bottom of the list."

If the Government be sincere in their desire to perform their duty on behalf of the public, they will at once suspend all proceedings for new lines and extensions of old ones during the sittings of a Committee, which should be appointed to investigate the abuses and mis-

management of the system, and prepare their report on the best remedies to be applied for the protection of the public and those who embark their capital.

One of the great errors committed by the Railway Board and the Government is the mistaken notion, that in extending the powers of old companies they are protecting the vested interests of shareholders. Now a more mischievous and mistaken policy cannot be imagined. Take, for example, the South-Eastern line, originating as it did in a mere bubble company, the concoctors of which, finding they could not induce the landowners on the direct Dover line to sanction their proceedings, made part of a Dover and Bristol line (from Reigate to Dover), and, by running twenty miles on the London and Brighton line, called their undertaking the London and Dover.

It would be extremely difficult to find, amongst all the ingeniously drawn statements of 1845, prepared for the purpose of inducing inexperienced speculators to part with their cash, any thing equal to the following report, in favour of the South-Eastern scheme of 1836, for the purpose of moulding part of a Bristol and Dover railway into the very best line that could be made for the London and Dover traffic:—

Extract from the Directors' Report, at a General Meeting of Shareholders in the South-Eastern Railway, held Dec. 1836.

“The importance of a railway communication to Dover, as the great thoroughfare to the Continent, and as an increasing watering place, early engaged attention.

“The parties with whom the South-Eastern Railway Company originated, first turned their attention to the subject in the year 1833. It was then proposed that the line should take a more northerly direction, by way of Gravesend; but after full consideration it was abandoned.

“Further investigations were then pursued. Many other lines were surveyed, and no pains were spared in examining the subject.

“One of the principal advantages of the South-Eastern line is its situation at nearly equal distances from the Thames and the British Channel; thus forming a main trunk, from which branches may be extended to almost all places of importance, not only in Kent, but also in East Essex,—a district comprising an area of more than 2000 square miles.

"The line on the Northern side of Kent would have been unavailable for the use of any part of the South, and would altogether have excluded East Sussex. The distance to Dover would have exceeded that by the South-Eastern line. The hop districts would not have been included, and the line being almost parallel to and close to the Thames, would have been exposed throughout to the rivalry of steam navigation.

"To the north of the line, Maidstone, Canterbury, Ramsgate, and other large towns, are easily accessible by branches."

When the main line from Reigate to Folkstone was finished, the managers set about making zig-zag lines to monopolize the traffic, notwithstanding common sense and common honesty must have told them that they were wasting the capital of the shareholders, and taxing the public traffic with double the proper charges, as the following distances will prove:—

By the South-Eastern Railway the distance to

	Miles.		Miles.
Tonbridge is	41	by a direct line ..	28
Maidstone	56	„ ..	34
Ashford	67	„ ..	54
Canterbury	80	„ ..	56
Tonbridge Wells ..	46	„ ..	30
Dover	88	„ ..	74
Margate	100	„ ..	74
Ramsgate	96	„ ..	74
Deal	100	„ ..	74
Hastings	64	„ ..	56

Such are the performances of the directors of the company claiming an entire monopoly of the traffic in the South-Eastern district, for the purpose of taxing it with double charges created by their improper expenditure, and at the same time prejudicing the investments of shareholders.

But these bad examples are followed by others; and this, like the Great Western and Northern companies, continues to persist in working out badly planned projects; for the line from Tonbridge to Tonbridge Wells is only adapted for part of a line between Maidstone and Lewes, notwithstanding the company desire to use it as part of a direct line from London to Hastings. Last

session of Parliament they obtained an act for a line from St. Leonards to Ashford, which is one of the most absurd examples of engineering science that could be found in the country, and gives a further proof that improper and inexperienced persons are employed to plan and execute railways. This line, instead of taking a north-eastern direction before entering St. Leonards, is to pass in tunnels close to the back of the town, cutting into the springs which supply the houses with water; and as a matter of course the tunnels will be under all sewers from houses that are and will be erected on the north side. In addition to these objections, the level of the rails is ten feet below a water course, and there is a curve of small radius connecting the tunnels. Then, instead of the line taking a northerly direction from the proposed Hastings Terminus, with a gradient of 1 in 200, it is to go north-east, up a gradient 1 in 50 for seven-eighths of a mile. By these *clever* arrangements the shareholders and the public are charged with a useless expenditure of about £100,000. The South-Eastern company have just as much right to this line, for the advantage of the shareholders, as for a line from Clapham to Tooting. They are not, however, content with one wrong line to Hastings, but are applying to Parliament for powers to make a second from Tonbridge Wells, to join the line west of St. Leonards, instead of the centre of Hastings, where four-fifths of the inhabitants and visitors reside. The bill for this line has passed through the House of Commons, and been twice read in the House of Lords. The line connected with it is a zig-zag one, eight miles longer than the direct London and Hastings promoted by an independent company.*

In fact this company, after an expenditure of five or six millions, have scarcely a mile of direct line between London and any town in the South-East district. All these kinds of proceedings are

* A new company was formed to make the right line, direct from Hastings to London, eight miles shorter than the South-Eastern project, but the plans and sections were not ready for deposit on the 30th of November. This line is the English portion of the direct line between London and Paris. It would be of great public advantage to have an independant company to make it; for passengers and goods would then be conveyed at half the charges made by the South-Eastern company. It is equally important that an independant company should make the North-Kent line, if the public interests are to be consulted, because it is totally impossible that any company, so burthened with debt as the South-Eastern, can convey the traffic on the same terms as one free from debt.

equally injurious to the shareholders; because if their money is invested in the stock of the North Kent, Direct Hastings, Direct Manchester, or other independent companies free from debts and the effects of bad management, their prospect of remunerative profit is so much greater, that no man of business, who gives the subject fair consideration, can doubt it; and the course the shareholders should take to protect their interests in the South-Eastern old stock, is to economise their management; for in the professional department alone the expenditure, during the last five years, would have been a very nice addition to the dividends.

After this explanation it must be obvious that the scrip and shareholders, in the new schemes of this company, will only exercise common prudence, if they take advantage of the proposed Act for dissolving bubble companies, and thus prevent the great prospective increase of their liabilities in some of the worst planned railways of the year 1845; especially if their projects connected with Hastings are to be taken as an example for the rest. As to the name of Stephenson being attached to them it is any thing but a proof of soundness, because that gentleman must devote much more time than he could spare to become acquainted with the best lines running through all the maze of hills in West Kent and East Sussex. With regard to the railways promoted by the old companies there is much more caution and investigation required on the part of the legislature to protect the public, than in the trunk lines promoted by independent companies. Shareholders in the old companies, who desire to support the value of their existing property, will only act with common prudence in guarding against the extension of undertakings that will prove unprofitable to all except the managers, who may from time to time profit by the fluctuation of value in shares. Indeed prudent shareholders, the addition of length to lines of railway, in which they have invested all they are disposed to embark, is generally a loss to them, by the division of profits on a larger amount of capital, or a sale of their shares at reduced value, in consequence of forced sales to meet further calls; for few shareholders are prepared to add to their investments as often as it may please the professional managers and the directors of companies to project new schemes, which in many cases are more for their own advantage than those of shareholders or the public, from whom the profit is to be derived.

It may be asked, why are acts granted for such works? But those who have experience in railway affairs know how easy it is to make black appear white, by modern engineering evidence, before a committee of members who know very little about gradients, curves, or levels; and especially when Messrs. Brunel, Stephenson, and Co. are supposed to have monopolized all the means of giving correct information; although there is scarcely a road surveyor whose evidence is not more valuable, and more to be relied upon, for levels, earth, and bridge works, in the district where he resides. As respects the rails, chairs, sleepers, &c., a furnishing ironmonger and carpenter, who had never seen such works but once in their lives, would have very little difficulty in entering the field of competition with either Mr. Brunel or Mr. Stephenson, who even differ in opinion, to the extent of two or three feet, in a seven feet gauge; as if no intermediate width could be better for general working purposes.

Reference to a map will prove the following trunk lines are required in the South-Eastern district:—

A line from Bristol to Reigate, Folkstone, and Dover, using the cross-country line which the South-Eastern company have hitherto called the London and Dover.

The direct London, Brighton, Lewes, and Shoreham.

The direct London and Hastings, with branches to the town and port of Rye, and from Tonbridge Wells to Lewes. (*This line is the English portion of the direct line between London and Paris.*)

The direct London, Maidstone, Folkstone, and Dover.

The direct London, Gravesend, Rochester, Chatham, Canterbury, Dover, and Ramsgate.

The above have competing interests, and consequently should be under the management of a distinct company for each line.

The charges for construction of the old lines are not the only cases of the waste of funds. As an example of the subsequent charges of an equally questionable character, take the notorious contract of £24,000 per annum for surface repairs of the South-Western line, after an enormous charge for repairing a few slips of earth. This contract for maintenance of way (the surface repairs,) if subject to competition, might be taken for £4,000 per annum; for if new sleepers or rails are required they are charged extra. The slips of earth on the Croydon

line, shortly after the Brighton line was opened, are also examples of the way in which shareholders are overcharged. If a similar accident had happened on a turnpike road, the removal of the soil and trimming the slopes would not have caused an outlay of one-twentieth part of the amount charged to the Croydon shareholders; and they would have been much better protected against future expenses.

The fact of the South-Eastern company having at present the power of taxing the traffic of the South-Eastern district, to the extent of six hundred thousand pounds per annum, on the six millions of capital expended, or to be expended, by that company in their cross country lines, without having made a direct line to one town, is ample evidence of the want of government control for the protection of the shareholders and the public, for the purpose of securing the application of future outlay in the formation of independent lines, with principles of sound economy, thereby securing cheap conveyance for passengers and goods, and certain, instead of precarious, returns to shareholders.

If the construction accounts of the Eastern-Counties, Great Western, Birmingham, South-Eastern and other railways are investigated, they will be found of a similar character to the Brighton; but as the author has given more attention to the latter, the following little history of the management may be enough for the purpose of making out a case for legislative investigation of the evils of the present system, and the best remedies to apply for protecting the public and those who invest capital in such important public works:—

LONDON AND BRIGHTON RAILWAY.—REPORTS OF DIRECTORS,
ENGINEERS, ETC.

No. 1.—Estimate by Mr. Rastrick, dated 7th December, 1837:

Works	£706,000
Land and compensation, estimated by Mr. Driver	70,000
Shoreham branch	69,800
	<hr/>
	£845,800

“In consequence of the recommendation of Capt. Alderson, of the Royal Engineers, the Parliamentary Committees of the Lords and Commons authorised the substitution of a tunnel at Merstham for open cutting, and the lengthening of the tunnels at Balcomb and Clayton,

whereby, and by other improvements which I have made, I have been enabled to reduce the cuttings from 9,251,000 cubic yards of earth-work to 5,867,000 cubic yards, making a saving in cutting of 3,384,000 cubic yards. Allowing the most liberal prices for the work, the amount of my estimate for the main line, exclusive of contingencies, is reduced to £706,000; and allowing 10 per cent for contingencies (amounting to £70,600) the total amount of my estimate is £776,600, being £29,372 less than the Parliamentary estimate, which saving being added to £70,600 will give me nearly 15 per cent for contingencies. In my labours I have had the advantage of Mr. Joseph Locke, who has taken great pains to make himself thoroughly acquainted with the whole of the main line, and the branch to Shoreham; and has gone over the ground with me, and fully considered every thing that could bear on the improvements of the line, the manner of execution, and the value of the work.

"With regard to the often-agitated question of the supposed necessity of cutting chalk with a slope of one to one, instead of the plan I propose to adopt, I have calculated the extra quantity of cutting that the slope of one to one would require, and I find that, for both the Merstham and Clayton cuttings, it would only amount to about one million of cubic yards extra, the cost of which would not exceed £40,000, which sum is the additional expense that such an extraordinary expedient would occasion if resorted to; but I shall prove, in the execution of the work, that it is altogether unnecessary.

"(Signed)

J. U. RASTRICK."

"The time in which the line may be executed need not exceed two years and a half. It is unnecessary for me to trouble you with the details of my calculations, either as to the cost or the time of execution. The aggregate amount is what more directly affects you than the steps by which the conclusions are obtained; I may, however, be permitted to exceed the limits of my instructions by venturing an opinion, *that contractors are to be found to undertake the work for the amount, and within the time I have stated.* On the Southampton railway heavier works, through more precarious materials, and at a less cost, are now being satisfactorily executed; and, with the experience of those works, I see no reason to apprehend difficulty in encountering those on your line. There is scarcely a district in England

where the material is more favourable, and thus the contingencies, both as to cost and time, are rendered less vague than are usual in such cases.

“(Signed) J. LOCKE.”

No. 2.—Dated 18th of January, 1838. The Directors increase the sum, including, as they state, every contingency, to £1,120,000.

“The next object of your directors was to make the necessary preparations for the commencement of the works of the railway, and they accordingly instructed their Engineers to make out the working surveys, levels, and estimates; and for the satisfaction of the proprietors, as well of themselves, they obtained the assistance of Mr. Locke, the eminent engineer, who personally examined every part of the line, and investigated the estimates, and whose report, as well as those of the Company’s engineers, has been already communicated to you. That the works do not exceed those that have been successfully accomplished on other railroads. That the material through which it passes is very favourable for the execution of the works. That the costs of executing the main line and branch to Shoreham, exclusive of the land, will not exceed £920,000. That the railroad may be opened to the public within three years from the commencement of the works, and that contractors would undertake its completion for that amount, and within that time. To this sum of £920,000 is to be added the land, buildings, stations, and every contingency, amounting to £200,000, making a total of £1,120,000 necessary to complete the main line and branch to Shoreham.

“(Signed) J. HARMAN, Chairman.”

No. 3.—Dated 29th July, 1840. The Directors increase the sum to £1,800,000.

“In order that no delay might arise in the execution of the railway, the directors used their utmost endeavours to obtain possession of such parts of the land upon the line as were first required for the works; and they have purchased property to the extent of twenty-seven miles and forty-seven chains, and have agreed to purchase to the extent of eleven miles and forty-one chains, leaving only seven miles and fifty-two chains, for which arrangements have not at present been made. The land remaining to be bought is for the most part agricultural, of comparative small value, and in the settlement of which the directors anticipate but little trouble.

"Although in some instances difficulties have been encountered in settling the compensation for the land, yet it is but justice to the owners to state, that with few exceptions they have thrown no impediments in the way of the directors; and though in some cases it has been found necessary, for the protection of the interests of the company, to have recourse to juries, yet, considering the extent of property already acquired, those cases have been rare, and the results are most satisfactory, and such as fully to justify the course adopted. The contracts already let, and in operation, extend over a distance of $41\frac{1}{2}$ miles, and have been taken by contractors of great experience, and there are but five miles of the line to be contracted for, and for which advertisements have been issued.

"Nothing further remains but for the directors to congratulate the proprietors upon the advanced state of the works, and to assure them that a more satisfactory condition than those works exhibit, at the present period, could not have been anticipated; and that the further they progress the more fully are they convinced of the ultimate success of the undertaking, and that the prospects hitherto held out to the public will be fully realized. The money expended by the Brighton company for the land and works upon that portion of the line which the South-Eastern company have the option of purchasing, is to be re-paid with interest by the South-Eastern company, thereby diminishing the cost of the Brighton line at least £200,000.

"The directors having taken into consideration the probable amount necessary to complete the whole of the works, feel confident that it will be only necessary to make further calls upon the proprietors to the extent of £8 per share, making a total of £25 per share, as they are then authorised by the Act of Parliament to raise £600,000 by way of loans.

"In conclusion, the directors think that the proprietors cannot but be gratified with the present state of the undertaking, the whole of the land having been purchased or agreed for—all the works being in a forward state—and the amount at which the contracts have been taken most satisfactory; and the only requisite to bring the railway to an early completion, is the co-operation of the proprietors with the directors, who pledge themselves to use, as they have ever done, every care and exertion in discharge of the trusts reposed in them, and they are firmly convinced that everything they have hitherto held out to the

proprietors will be fully realized. The directors, in conjunction with their engineer, have gone into calculations to enable them to form an approximate estimate of the further amount requisite not only to complete the works, but to provide stations, engines, carriages, &c., and for meeting every other expence incidental to the opening of the line throughout, upon a liberal scale; and the result of their investigation has led them to the conclusion that £600,000 will be sufficient for these purposes, and which will bring the whole cost of this great undertaking under £1,800,000.

"The directors cannot close their report, without offering their congratulations to the shareholders on the very gratifying state of this company. The greatest difficulties on the works have been surmounted; the period of opening the whole line is no longer a matter of speculation.

"The Shoreham branch bids fair to be profitable, and every thing attached to the undertaking is in a prosperous and satisfactory condition. Its whole cost will not exceed £1,800,000, from which will have to be deducted at least £300,000 for the portion of the line to be taken by the South-Eastern company, and the resale of land not required by the railroad. They feel deeply grateful for the confidence that has hitherto been placed in them; and, fully relying on a continuance of that confidence, they will not relax in their exertions to discharge faithfully the onerous duties imposed upon them.

"(Signed) J. HARMAN, Chairman."

No. 4.—Dated 27th January, 1841. The Directors increase the amount to £1,990,000.

"The gross amount at present expended, and for which the company are under liabilities, is £1,660,000, which added to the £410,000 required to complete the line, will make a total of £2,070,000, from which will eventually have to be deducted £80,000, for extra land to be resold, which will reduce the actual cost of the line to £1,990,000. In addition to this, when the South-Eastern company avail themselves of the agreement for the purpose of a moiety of the line between Croydon and Red Hill, this last amount will have to be reduced by about £350,000; so that in that event the entire cost to the proprietors will be about £1,640,000.

"(Signed) J. HARMAN, Chairman."

No. 5.—Dated 9th August, 1841. The Directors increase it to £2,289,081.

“ At the last general meeting the directors stated that they expected to be able to complete the works, with a suitable establishment for opening the line throughout, at a cost of about £2,070,000. By the accounts made up to the 30th June last, the gross expenditure of the company was 1,951,906*l.* 17*s.* 4*d.*; since which time a further sum of £92,935 has been paid. The liabilities are £180,240, and the amount now requisite to complete the line is estimated at £64,000, making a total of £2,289,081. Of this sum the directors have paid £2,044,841. They have at their bankers, and lent out at interest, and unpaid on mortgage bonds tendered, 143,743*l.* 0*s.* 2*d.*; they have due on calls £12,455; they have shares, which if sold at par will amount to £39,950; they have land to be resold, £80,000; making in the whole £2,320,989; thus showing sufficient means without the payment expectant from the South-Eastern company, or having recourse to the proprietors for further aid.

“ (Signed) J. HARMAN, Chairman.”

No. 6.—Dated 20th January, 1842. The Directors increase it to the enormous sum of 2,852,893*l.* 10*s.* 5*d.*; less the error discovered by the committee of £70,000.

“ At the last general meeting it was stated that the total outlay for completing and opening the line throughout, with a suitable establishment, would be £2,289,081. By the accounts made up to the 31st December last, the gross expenditure was 2,269,359*l.* 0*s.* 11*d.*; the liabilities under the seal of the company were 814,377*l.* 15*s.* 2*d.*; the outstanding debts 61,406*l.* 10*s.* 6*d.*; the ten per cent. retained from the contractors £50,000; the amount requisite to complete the line 59,068*l.* 4*s.* 0*d.*; the land for temporary purposes £15,000; making together 2,639,211*l.* 10*s.* 8*d.*

“ (Signed) J. HARMAN, Chairman.”

To which is added, for extra workshops,						
wharfs, &c.	..	..	..	£ 100,000	0	0
For London Bridge station			..	85,000	0	0
Sundries	..	..	..	28,682	0	0
Making a total of	..	..	..	<u>£2,852,893</u>	<u>10</u>	<u>8</u>

The total amount of cash received from the shareholders appears to be about £2,500,000.

The TOTAL VALUE of the works, land, carriages, stations, &c., if calculated at fair contract prices, was at the utmost £1,000,000; thus leaving the enormous sum of £1,500,000 to be accounted for by the directors. But the whole, with the exception of the land, is so easy of estimation by any practical man, or one who has given the subject proper consideration, that all uncertainty can be removed: in fact, it has been removed by the opinion of Mr. Locke, the engineer, in his letter to Sir Isaac Lyon Goldsmith, as expressed in the following terms:—

“ That he thinks it due to himself to state that the estimates he then made were, in his opinion, adequate to the work; and that his own subsequent experience has confirmed that opinion.”

The principal works may be considered to contain—

Brickwork and Earthwork—calculated at per cubic yard; and the cost is quite as easy to estimate as the proper charge for a quartern loaf.

Tunnelling.—The mining operation of excavation, and the brickwork also, are by no means difficult to estimate by a miner and brick-layer.

Iron Rails, &c.—Any director can calculate the cost when he is told the correct weight of iron to the yard.

The Stone Coping for Bridges, &c.—at per foot cube, or super, or at foot or yard run, is also an item easily decided.

Stoning the Surface, and Fencing—are neither difficult to understand or calculate by ordinary road surveyors, or other persons who have given attention to the subject.

The Stations—may be estimated by comparison with other buildings of the same dimensions; in fact, the works of a railway are capable of estimation with a degree of certainty of the ultimate cost within 5 per cent. on the total amount, subject only to the variations in the market price of materials and labour, which, in this case, were reduced in one principal item by the operation of the new poor laws, and in another by the reduction in the price of iron.

With respect to the first item of earthwork, upon which those who are fraudulently disposed fasten for the purpose of extortion, there is

no work more easy to be estimated, and it may be calculated thus:—

The cost of digging and filling the waggons or barrows is covered by an average allowance of three-pence per cubic yard; its removal within a mile will cost from one penny to six-pence per cubic yard extra, according to the distance, beginning with a run of about 100 yards with barrows—making about four-pence per cubic yard as the total cost to the contractor. If a distance of about 200 yards, it will cost him one penny more, or about five-pence per cubic yard. Beyond that it is usually removed in carts at a cost of from three-pence to six-pence within the mile—making the total cost from six-pence to nine-pence. These are prices at which removing moderate quantities of earthwork is performed on turnpike roads, when the embankments are formed with much more caution, in layers of about eighteen inches in depth, in order to consolidate them previous to laying on the hard material.* But as the earthwork is in general much larger in quantity to form a railway, and the embankments are formed in a loose manner, the use of rails and earth-waggon for the purpose reduces the cost of removal to the contractor, and enables him to perform the work at reduced prices in proportion, and particularly when a locomotive engine can be employed, because the removal of 1000 cubic yards per day, at one penny per yard, will give £4 per day for the use of the engine, &c.; and it will matter very little whether the distance is one, two, or three miles, as the engine must be kept waiting if the distance is short. The earthworks being heavy on the Brighton, if properly worked, eight-pence per cubic yard would have enabled contractors to clear upwards of 25 per cent., and this is one penny half-penny per yard under the price estimated by Mr. Rastrick—making the total cost of the earthwork about £200,000. The tunnelling was estimated by the contractor, Mr. Hoof, at £20 per yard, forward bricked throughout. This is a liberal price in chalk soil. The other works, if estimated so as to allow contractors to clear from 5 to 20 per cent., according to their talent and means, will bring the whole considerably within the revised estimates of Messrs. Rastrick and Locke.

* Contracts have been recently made for the formation of the Hawkhurst Junction road; the contracts containing about one hundred and seventy thousand cubic yards of earthwork, at about six-pence per yard.

The following particulars of quantities will enable shareholders to estimate within £50,000 of the value of the works :—

Earthwork, about 6,000,000 cubic yards, at 8 <i>d.</i>	£
per yard	200,000
Three miles of tunnelling, at £20 per yard, say	
£40,000 per mile to cover extra works..	120,000
About 100 bridges, 2 viaducts, culverts, &c.	150,000
Fifty miles of permanent way, including sidings,	
extra lines at stations, fencing, &c., at £4,000	
per mile	200,000
Land and compensations, including all the corrupt	
agreements and contingencies, as estimated by	
the directors	150,000
Locomotive engines, carriages, &c. &c.	100,000
Total	<u>£,920,000</u>

Fifty thousand pounds, more or less, is of little consequence in making out a case for investigation, when the expenditure is three millions, and no satisfactory accounts produced; coupled with the fact of the secretary having absconded, and when it was admitted by the chairman that he threatened the directors with exposure if he was followed and taken.

The following particulars are extracted from reports and evidence of the directors and engineer: consequently the most important portion of the statements are so authenticated as to remove all doubts of their correctness.

The directors and secretary gave the following contradictory testimony before the Special Committee of the House of Commons :—

John Harman, Esq., Chairman, and Mr. Thomas Wood, Secretary,
3rd May, 1839.

“ Question 1856. (*Examined by Mr. Lock.*) How has the purchase of land been?—That will very little exceed the estimate; some of the land we were obliged to pay more for than the estimate.

“ 1857. Have you been obliged to go to a jury?—Yes, in several cases; there was one very heavy case at Brighton.

" 1858. Have the sums awarded exceeded the sums you offered?—We did not offer any sum: we went at once to a jury. We found the difference was so great between ourselves and the parties of whom we were to purchase the land, that we thought it best to go to a jury at once.

" 1859. In such cases was the estimate exceeded?—No.

" 1860. (By Lord Granville Somerset.) Did the sums awarded approximate nearer your calculation, than the valuation of the other party?—Yes: the sum awarded in that instance was £12,950, and the sum demanded was £44,000."

Evidence of Mr. Driver, upon oath, before the Committee of the House of Lords. (Examined by Mr. Pollock.)

" Are you a surveyor?—Yes.

" And very largely employed by the Government?—I am.

" Where do you reside?—In Richmond Terrace.

" Have you been accustomed to value land and property of all descriptions to a great extent?—I have.

" For many years?—For a great many years.

" Have you ever been over the line of Sir John Rennie's railway?—Yes.

" With a view to put an estimate upon the land?—Yes.

" Will you state, in the first place, what is your estimate of the value of the land upon Sir John Rennie's line?—My estimate of the value of the land required for Sir John Rennie's line, and the compensation for all damages to be incurred by the construction of the railway, is 70,833*l.* 10*s.*

" What quantity of land do you take as requisite for Sir John Rennie's line?—Five hundred and three acres and three roods.

" And in your estimate you spoke about compensation for damages; do you include severance of land by cutting through?—Yes.

" And the interest of leases and sub-leases?—Yes.

" And in fact to every species of damage to which a railroad would lead?—Yes.

" Now in estimating the land of Sir John Rennie's line, have you taken into account all the improved curves at Patcham and at Merstham, that were proposed?—Yes: that estimate of mine was made subsequent to that improvement.

The result of this evidence is, that the land was purchased for the sum estimated, or thereabouts, leaving a difference of £300,000 to be accounted for; but as jobbing in lands is notorious, it creates a doubt whether any part of the answers relating to the costs are correct.

The chairman, Mr. Harman, and the secretary, Mr. Wood, prove, by the following evidence, that the contracts were within the estimate:

Committee of the House of Commons, May 3rd, 1839. (Examined by Mr. Locke.)

“ Question 1845.—Have you contracted for all the works?—Nearly all.

“ 1855. How have they gone on compared with the estimate?—Very fair; indeed averaging them quite within the estimate.

“ 1809. (*Examined by Sir Henry Verney.*) You state that your works have generally been completed, as far as you have gone, within the estimate which was originally made; did that estimate include station-houses, and all that you now find necessary?—We have not let those yet. I stated, as far as we had let our works, the contracts had been within the mark.

• “ 1910. But the original estimate did include all these?—Yes.

“ 1811. You do not find that more works are to be made than estimated?—No; I do not anticipate any.”

A committee, appointed by the shareholders in 1842 to investigate, state in their report, that “in order to account for the excess of expenditure, they refer to the explanation of the engineer.” Although the following excuses, made by Mr. Rastrick, for the enormous additional outlay, are scarcely worth notice, still, in order that both sides of the question may be fairly laid before the shareholders and the public, they are added with suitable comments:—

1st. “ *The earthwork was originally calculated at the price of the day; but immediately afterwards a general rise of wages took place, and consequently a greater price was required for it.*”

The earth-work was estimated at 9½d. One mile and half average had, at least, 1½d. per cubic yard above the average price paid in Sussex on turnpike roads, upon which the advantage of moving the

earth on rails was not obtained. The average price of labour, by the operation of the new poor laws and other causes, during the progress of the works, was lower than at the time the revised estimates were made; and the men who actually performed the work received a price which left a large profit to the contractors, supposing they received the price estimated by Mr. Locke and Mr. Rastrick.

2nd. *"The quantity of earthwork was increased to a very considerable extent by the slopes in most of the cuttings having been made flatter, it being impossible to ascertain the exact nature of the soil at such great depths below the surface."*

The engineer and his witnesses swore, before the Committee of the House of Lords, that borings had been made in every part of the line. It is well known, that the earth can be bored to ten times the depth of any cutting on the line; and if 1,000,000 cubic yards extra were removed, (but which is doubted) the cost should not exceed £30,000.

3rd. *"The slippery nature of the materials with which the embankments were made, occasioned such very great slips, that the quantity of materials to make the same good and increase the slopes, as well as the faggoting, draining, pounding, and puddling, occasioned a large additional expenditure."*

This is perfectly absurd: for an embankment cannot require drainage beyond what is made in the first instance by culverts or bridges; for the form of an embankment prevents the probability of water lodging on any part of it, *if properly made*; and the trifling expense of repairing slips in an embankment as the works proceed, or within twelve months after, falls, as a matter of course, on the contractor. It must be farther borne in mind, that a large quantity of the cuttings were not required, and were carried to spoil.

4th. *"There was a very great proportion of the materials that came out of the cuttings that was originally intended to have been made use of to form the embankments; but the experience of the use that had been made of material of the same quality in other parts of the works demonstrated that it was perfectly unfit and unsafe to be made use of for that purpose. The consequence was, that this bad material was obliged to be run out to spoil, and an equal quantity procured from the*

side cuttings, and in all these instances doubling the quantity of earthwork."

These are the boldest assertions ever advanced ; for there are no kind of materials that can be excavated, in any part of the country, which a respectable competent surveyor or engineer would run out to spoil, instead of using it to form an embankment, if the latter was required to be formed of the earth to be excavated.

5th. *"The quantity of the brickwork, in almost all the bridges, retaining walls, &c., was obliged to be increased, to give that additional strength which the slippery nature of the earth, both in the cuttings and in the embankments, rendered necessary. Great additions were made to widen several of the bridges, and in other places bridges were demanded that had never been contemplated."*

If there is any truth in the statement respecting additional strength being required, it is no proof of sound judgment on the part of the engineer ; but if ten or twenty cubic yards of extra concrete or brickwork were required to each bridge throughout the line, the sum of £10 or £20 each would not amount to above £2,000 ; and if six extra bridges were required the cost of the ordinary description would not exceed three or four hundred pounds each.

6th. *"The stone of the country was calculated to have been made use of ; but comparatively little could be found that was of a sufficient degree of hardness, or that would stand the weather, and therefore stone was obliged to be had that came from other countries at a great extra expense."*

This statement is at variance with the evidence of the engineer when before the Committee of the Houses of Parliament ; for abundance of stone was found on the line. A large quantity was used for Waterloo and Southwark bridges, and other public works. The engineer will find much difficulty in proving the failure of stone used for the works.

7th. *"The weights of the rails and chairs and their appendages were considerably increased ; the experience of other railways having convinced the directors that it would be most economical to add to their strength ; as all other railways, then in course of execution, were adopting the same measures."*

If the evidence of the engineer is referred to, the estimated price of iron, £12 per ton, will prove that a saving ought to have been effected quite equal to the additional weight ; and, if the contracts were open and fair, that they must have been taken at less price than the original estimate.

8th. *" The sleepers were not calculated to be Kyanized in the original estimate."*

Suppose the cost of Kyanizing to be £100 per mile, the extra cost is little more than £5,000.

9th. *" The number and extent of the bridges and viaducts have been considerably augmented."*

In the revised estimates it is stated that the earthwork is reduced from nine to about six millions of cubic yards. This reduction caused an extension of the brickwork in viaducts, which was included.

10th. *" The tunnels, and their culverts, drains, and adits, have cost nearly three times the original estimate ; those through the chalk being originally calculated to require brick arching only over the top ; whereas they have required to be bricked throughout with an extra thickness of brickwork, and a considerable portion set in Roman cement. No water was ever expected to be found in the tunnels ; whereas during the winter seasons the water very much obstructed the operations and progress of the works, and on several occasions stopped them altogether for short periods."*

The evidence of Mr. Rastrick's crack contractor, Mr. Hoof, gives a flat contradiction to the statement as to cost ; his estimate being at the rate of £20 per yard, forward bricked throughout. As respects the assertion of any man, and especially an engineer, who will come before the public, and state that he did not expect to find water in the earth one or two hundred feet below the surface, no observation is required, beyond an appeal to common sense. Any person paying for sinking a well would be exceedingly annoyed if he did not get water at half the depth. In fact Mr. Rastrick knows very well that the expense of providing the necessary drainage for the tunnels was included in Mr. Locke's estimate and his own.

11th. *"The extent and dimensions of the culverts through the tunnels and the deep cuttings in the chalk formation, were never anticipated to have been necessary; but fortunately they have been executed in such an efficient manner that they have been of the most eminent service during the late season, and could not possibly have been dispensed with."*

These culverts are mere drains, costing in reality but a trifle in proportion to the total outlay.

12th. *"Circumstances have required the stations to be made of a much more extensive nature than could have ever been thought necessary; and at all the stations on the line quadruple lines of rails have been laid down, so as to keep the main line always open; and land has been taken at the stations on the line for the use of traders both for coal and merchandise, of which I expect a large traffic; for unlike all other railways, there is no other communication that can compete with this railway; besides a multitude of other circumstances that it is almost impossible to enumerate."*

The extra land referred to must be the purchase of Mr. Kemp, which is included in the charge for land. The short lengths of extra rails, if measured, could not amount to one mile in length of single line, and therefore cannot have cost above £2000 extra. As to the multitude of other circumstances, they were amply covered by the large sum of £69,000 reserved for contingencies. In respect to the station, £5,000 extra will make a great show at Brighton, where materials are cheap; and there is nothing very costly in the station.

13th. *"In the original estimate there was not any thing set down for locomotive engines and tenders, first and second class passenger carriages, vans, trucks, horse boxes, carriage trucks, coal waggons, coke waggons, goods waggons, cattle waggons, engine houses, coach houses, passenger sheds, offices, warehouses, wharfs at Shoreham, coke ovens, coal stores both at Shoreham and Brighton, and all the paraphernalia of the fitting up and furnishing the same, &c. &c. &c.; as all these articles and things were considered as belonging solely to the carrying department, and for which no estimate was originally made."*

The coke ovens are trifling, and must be covered by the estimate. The carrying part of the concern could have been accounted for by furnishing an inventory with the cost of each article.

14th. "*In fact the original estimate for the London and Brighton Railway was made out on the same plan as two thirds of all the railways that have been made were calculated upon.*"

15th. "*That is to say for a railway with two lines of rails from terminus to terminus, with a crossing from one line of rails to the other at every ten or twelve miles, with a small portion of land for stations.*"

16th. "*In the same manner as all the canals in the country have been made, namely, a canal from terminus to terminus : now the cost of these works is the capital of the company.*"

17th. "*The carriers at the canal making and providing their own wharfs, docks, warehouses, cranes, offices, boats, horses, &c. Now the costs of all these establishments is the capital of the carriers.*"

18th. "*On a railway, if the company are to become the carriers, they of course must provide themselves with the necessary means of carrying on the traffic as enumerated in the 13th paragraph, and this capital ought to be considered as a separate and distinct capital from the railway capital.*"

These excuses are too absurd to notice, except by observing that they confirm the fact of the charges beyond the estimates being totally unaccounted for in value.

The following facts are proved beyond all reasonable doubt :—

That the reports and accounts of the directors and engineer have been from time to time of a most extraordinarily contradictory character. That the report of the committee and engineer were without satisfactory explanation relating to the enormous extra expenditure. That the directors stated that the estimated works were contracted for, and the land purchased within the estimates.

In fact no further proof can be required of systematic deception, on the part of some persons connected with the management, than a comparison of the first estimate of £840,000 (allowing the most liberal prices for the works, and including £70,000 for contingencies,) with the last estimate, in January 1842, of £2,500,000 and upwards. Here we have an excess of upwards of a million and a half, against which no value can be found, except in the carrying department, a few acres of land, and a share in the joint station at London bridge ; thus leaving a sum, considerably above a million, unaccounted for in value;

but this case is only an example of the Great Western, Eastern Counties, and numerous other lines, all proving that more than double charges were to be created on the traffic to pay interest on the wasteful expenditure.

As the present directors were in no way connected with the management up to the period at which this example of railway mismanagement took place, it is not intended to reflect on them, but is introduced to prove the foundation of the charges of three-pence instead of one-penny per mile for first class passengers, with proportionate charges for goods and agricultural produce.

At the time the Brighton and other lines were formed it was the custom to divide the contracts; and the earth, bridge, and tunnel works on the Brighton line were divided into about 18 contracts. Of late, however, a much more artful system is practised. The engineers give estimates of about double the cost at which the works can be executed by sub-contractors; and much credit is claimed for being able to produce contractors (friends of the engineers of course) to undertake the works within the estimates. Whereas if they were fairly and properly divided into moderate quantities, to meet the means of local contractors, and those who do execute them under the engineers' great contractor, the cost to the shareholders would be about one-half, and they would be of a more substantial character, especially in earth-works, which are very important for the safety of the public. In fact there is as much difference between an embankment formed by a railway engineer's contractor, and a local contractor employing a respectable road-surveyor, as between a coat made of the coarsest material by Moses, and one of the finest cloth made by Nugee or Stultz; one being like a sieve, and the other nearly equal to waterproof. Yet such is the delusion about railway earth-works; and they are generally considered of so wonderful a character, that the only competent persons—experienced road-surveyors—seldom have to superintend them; and many of the evils of the system may be traced to the want of information by landowners of the plain and simple character of the works to form railways. Country gentlemen (especially those who are in the habit of hunting) are much better acquainted with the levels than civil engineers brought from a distance; and, with the assistance of any well educated and intelligent local road-surveyor, would be more competent judges.

In order to understand, in a plain common-sense way, the works necessary to form a railway, the ears must be closed to the mystified stuff and nonsense uttered by some of the crack railway engineers, and rely on advice taken from respectable local surveyors. Even the latter will be scarcely requisite, if a little more than ordinary attention is directed to the subject. Tunnelling, which appears the most difficult, is an ordinary mining operation; and an experienced miner, with a moderate salary, is much more competent to superintend the excavation and construction of a tunnel, than a Brunel or Stephenson; and there is very little doubt that scores of miners could have been found to make the Thames Tunnel in one-third of the time, and at one-fourth the cost.

The laying of bricks in a bridge on a railway can be no more difficult than on a road, and an experienced county bridge surveyor must have known much more about bridge works than a railway engineer. In short there has been a great mistake in employing steam-engine makers to form railways. The previous operations of civil engineers had generally been confined to canals, docks, and similar works, where large sums were expended on undertakings of small extent; and thus has originated much of the extravagant and improvident expenditure on railways.

Another very great advantage to be obtained by the superintendence of local trustees and surveyors, is the judicious and economical application of the materials of the district, and not, as instanced in the case of the great viaduct on the Brighton Railway, when the engineer sent to Normandy for stone to make an open fence-wall, while large quantities of excellent stone actually existed near the spot to make a solid one.

Some of these observations may be considered personal and ill-natured; but how difficult is it to grapple with abuses of an important and extensive character without directly or indirectly alluding to individuals. To find words which may be agreeable to them, is as hopeless as to prepare a palatable and at the same time an effective declaration against a defendant, or an indictment correct and at the same time satisfactory to the prisoner.

Amongst the mystifications of civil engineers, during the last seven years, are the marvellous engineering difficulties they meet with. In one case an engineer stated he had made such a wonderful embank-

ment that as fast as he put the soil on the top it came out at the bottom. On another occasion, that he had met with ground that would not carry an embankment, but it was solid enough for the erection of a viaduct. Another engineer pretended that it was requisite he should be a geologist to understand how to form an embankment.*

The recent assertion, by a railway engineer, that "*the cost of constructing railways had increased 50 per cent. during the last year,*" is quite in character with modern engineering evidence. The truth is, that the prices of labour, timber, bricks, and lime are much the same; and the advance on iron would not make 5 per cent. on the whole. What dependance then can be placed on the evidence of professional men who will make such assertions, when the cost of the ordinary works of a railway should be as well known, in their respective localities, amongst contractors and surveyors, as the price of corn and meat in the markets. Let the works of railways be divided into moderate quantities, and offered to fair and honourable competition, and the result will be 50 per cent. under most of the estimates for the new lines, or the prices allowed to contractors usually employed by engineers. If proper economy had been used, double or treble the number of miles of railway might have been made for the cost of those existing. There is very little doubt that the estimates for the works of the London and York and North Kent lines exceed local contract prices 25 per cent.

These, however, are the effects of appointing steam-engine makers to perform the duties of road and bridge making; in short, everything has been done to make railway works appear what they are not, namely—difficult to plan and execute, instead of being of common

* The author was highly amused, about seven years since, when he was in a Committee room of the House of Commons, where the Committee were investigating the merits of the competing lines for the London and Brighton Railway, by seeing his glazier appear to answer in the affirmative to the question, "Are you a civil engineer?" On another occasion, in a Committee of the House of Lords, when Sir J. McNeil, C.E. was a witness to prove estimates of £11,000 for works to finish a road, which the author superintended as a trustee at a cost of only £2,000, a man, who occasionally measured land for farmers or reapers, was offered as a civil engineer to strengthen the same case. These instances may be considered fair examples of the value of much of the evidence upon which members of Parliament are in the habit of deciding, since what is called civil engineering evidence has been in request for railway projects.

sense character ; and there is not an average length of fifty miles of railway, with two miles of tunnelling through agricultural land, which should have cost more than £15,000 per mile, if fairly contracted for under local surveyors.

Respecting the professional charges, it must be obvious that the great body of civil engineers, surveyors, solicitors, and others engaged, would be much better remunerated, if charges were more regular, and business thereby increased.

Notwithstanding all that has from time to time been urged against Turnpike-road management, it is the best practicable one for the Government to use for indirect control for the benefit of the shareholders and public, provided the Railway Board is rendered efficient. All defects in the management of Turnpike Trusts may be traced to the want of Government Inspectors and Auditors. Had such existed in East Sussex during the last ten years, the tolls would not have been one half the present amount, and instead of the repairs of the roads being thrown on the Parishes they would be repaired by the Trustees.

If the Turnpike-road principles of management are adopted to railways, the public would have similar advantages to those of Leasing on the Continent, as a sinking fund would be created to pay off the debt incurred by the cost of construction, and companies would be formed for working the lines, for three, five, or seven years, with such scale of tolls as the Government Railway Board would consider fair between the lessees and the public. This must be matter for serious consideration. As to time and terms, it is only requisite at present to establish for the public the principles of the most perfect direct or indirect control by the Railway Government Board, and to secure the interests of shareholders in fair and steady, instead of fluctuating returns for their capital. No reasonable doubt can exist, that if five per cent. can be rendered certain under Government protection, it would be preferred to the precarious returns received through such questionable management as exists with most railways at the present period.

The great protection the rate-payers for the relief of the poor have experienced, by the appointment of Assistant Commissioners and Auditors on the part of the Government, is ample evidence of the expediency of similar protection against railway frauds.

A strong case, it is presumed, having been made out for the serious consideration of the legislature and the public, the following conclusions may be safely deduced, and their principles generally admitted.

That RAILWAYS are a new description of PUBLIC HIGHWAY, and consequently the principles of the laws relating to Turnpike Trusts and highways should be applied, with such alterations and additions as the different working requires, and experience has proved to be necessary, unless the French system of leasing, which has many advantages, be adopted.

That a number of Monopolies have been established, which are seriously adverse to the interests and rights of the public; and prompt legislative proceedings should be taken to prevent their extension.

That independant trunk lines should be established in the East, West, North and South districts, for the conveyance of passengers in first class carriages at one-penny per mile,—all other rates and charges in proportion, and regulations made for the use of the London stations, under the control of the Railway Board.

That the general failure of sound and unsound railway projects, promoted by independant companies, has given extraordinary advantages in favour of the worst lines, and those most opposed to public interests, which are promoted by old companies, as proved in the South-Eastern district, where a debt of six millions has been created by the South-Eastern company for cross-country lines; thereby rendering the traffic chargeable with £600,000 per annum, exclusive

